

Application No.: 10/795,952

Docket No.: TOW-066RCE

REMARKS

Applicants amend claims 1, 7, 12, and 13 and cancels claim 14. No new matter is added. Support for the amendment can be found throughout the specification and at least at Figs. 3, 17, and 19 and related text. Upon entry of this amendment, claims 1-9 and 12-13 are presented for examination, of which claims 1, 7, and 12 are independent. Applicants respectfully submit that claims 1-9 and 12-13 define over the art of record.

Claim Rejection Under 35 U.S.C. §112

Claims 7 and 13 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants amend claims 7 and 13 to address the Examiner's concern.

Claim 7 recites that the first electrode includes a first gas diffusion layer and the second electrode includes a second gas diffusion layer. Claim 7 further recites that each power generation unit includes a first electrode and a second electrode. Hence, it is clear that the first power generation unit and the second power generation unit each have the first electrically conductive gas diffusion layer and the second electrically conductive gas diffusion layer. Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 7.

Claim 13 is amended to recite that the seal member extends along an entire width of at least one of the separators on the surface opposite to the surface facing the power generation units, where the seal member includes a bent portion that extends along a side surface of the at least one of the separators and where the bent portion is interposed between the casing and the side surface of the at least one of the separators. Claim 13 points out which surfaces the seal member is on. Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 13.

Claim Rejection Under 35 U.S.C. §103**Claims 1, 2, and 5**

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Claims 1, 2, and 5 are rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent Application Publication No. JP 2003-197225 to Maeda et al. (hereafter "Maeda") in view of United States Patent Application Publication No. 2003/0022051 to Haluzak (hereafter "Haluzak"). Claims 3 and 4 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Maeda reference in view of the Haluzak reference and further in view of United States Patent No. 3,770,509 to Winsel et al. (hereafter "Winsel"). Claim 6 is rejected under 35 U.S.C. §103(a) as being unpatentable over the Maeda reference in view of the Haluzak reference and further in view of United States Patent Application Publication No. 2002/0187382 to Nishiumi et al. (hereafter "Nishiumi").

Applicants respectfully submit that the combination of the Maeda reference, the Haluzak reference, the Winsel reference, and the Nishiumi reference do not teach or suggest the limitation that the first and second electrically conductive films are disposed between the pair of adjacent power generation units and are not stacked on either of the adjacent power generation units, as recited in amended claim 1.

The Maeda Reference

The Maeda reference teaches stacking electrically conductive films on the exterior of a unit cell 110. Specifically, the Maeda reference teaches that the first electrically conductive film 211 is stacked on a fuel-side separator 111 and the second electrically conductive film 212 is stacked on an air pole side separator 112. The first electrically conductive film 211 is further connected with second electrically conductive film 212 via connection 132. In contrast, claim 1 requires that the first and second electrically conductive films be disposed between adjacent power generation units and not stacked on either of the adjacent power generation units, as recited in amended claim 1.

The Haluzak Reference

The Haluzak reference teaches in Figs. 4-5 that multiple membrane electrode assemblies 60 are placed on a substrate 62. A gold bond pad 78 is secured to each membrane electrode assembly 60 to allow the assembly to be placed into electrical communication with other components. However, the Haluzak reference does not teach or suggest the limitation that the

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first and second electrically conductive films be disposed between adjacent power generation units and not stacked on either of the adjacent power generation units, as recited in amended claim 1.

The Winsel Reference

The Winsel reference is cited by the Examiner to show that the electrical conductive film can be made of composite materials including resin and an electrically conductive material, as recited in claims 3 and 4. However, like the Maeda reference and the Haluzak reference, the Winsel reference does not teach or suggest the limitation that the first and second electrically conductive films be disposed between adjacent power generation units and not stacked on either of the adjacent power generation units, as recited in amended claim 1.

The Nishiumi Reference

The Examiner alleges that the Nishiumi reference teaches a reactant gas supply passage 228 and a reactant gas discharge passage 229 that extend through an end of the fuel cell in Fig. 4 and paragraph 48. The Nishiumi reference shows in Fig. 4 a refrigerant manifold 228 and gas manifold 229 that are formed in the fuel cell stacks 223. See Fig. 4 and paragraphs 58-59. However, the Nishiumi reference does not teach or suggest the limitation that the first and second electrically conductive films be disposed between adjacent power generation units and not stacked on either of the adjacent power generation units, as recited in amended claim 1.

Accordingly, Applicants respectfully submit that the combination of the Maeda reference, the Haluzak reference, the Winsel reference, and the Nishiumi reference do not teach or suggest the limitation that the first and second electrically conductive films are disposed between the pair of adjacent power generation units and are not stacked on either of the adjacent power generation units, as recited in amended claim 1. Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 1.

Applicants note that the dependent claims 2-6 also recite patentable subject matter. As such, for this and the reasons set forth above, dependent claims 2-6 also define over the art of record.

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Claims 7-9 and 14

Claims 7, 9, and 14 are rejected by the Examiner under 35 U.S.C. §103(a) as being unpatentable over the Maeda reference in view of United State Patent Application Publication No. 2003/0104262 to Kuroki et al. (hereafter "Kuroki") and further in view of United States Patent No. 6,680,139 to Narayanan et al. (hereafter "Narayanan"). Claim 8 is rejected under 35 U.S.C. §103(a) as being unpatentable over the Maeda reference in view of the Kuroki reference and the Narayanan reference and further in view of United State Patent Application Publication No. 2004/0028975 to Badding et al. (hereafter "Badding").

Applicants respectfully submit that the combination of the Maeda reference, the Kuroki reference, the Narayanan reference, and the Badding reference do not teach or suggest a first reinforcing film being in physical contact with and interposed between the electrolyte and the first end of the first electrically conductive gas diffusion layer of the first electrode, and a second reinforcing film being in physical contact with and interposed between the electrolyte and the second end of the second electrically conductive gas diffusion layer of the second electrode, where the second reinforcing film is separate from the second catalyst layer, as recited in amended claim 7.

The Maeda Reference

As set forth above, the Maeda reference teaches stacking electrically conductive films on the exterior of a unit cell 110. However, the Maeda reference does not teach or suggest the limitation of a first reinforcing film that is in physical contact with and interposed between the electrolyte and the first end of the first electrically conductive gas diffusion layer of the first electrode, and the limitation that a second reinforcing film that is in physical contact with and interposed between the electrolyte and the second end of the second electrically conductive gas diffusion layer of the second electrode, where the second reinforcing film is separate from the second catalyst layer, as recited in amended claim 7.

The Kuroki Reference

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The Kuroki reference teaches in Fig. 9 that a gas diffusion layer 15 extends beyond an end of a catalyst layer 13. The catalyst layer 13 is sandwiched between the gas diffusion layer 15 and membrane 12. However, the Kuroki reference does not teach or suggest the limitation of a first reinforcing film that is in physical contact with and interposed between the electrolyte and the first end of the first electrically conductive gas diffusion layer of the first electrode, and the limitation that a second reinforcing film that is in physical contact with and interposed between the electrolyte and the second end of the second electrically conductive gas diffusion layer of the second electrode, where the second reinforcing film is separate from the second catalyst layer, as recited in amended claim 7.

The Narayanan Reference

The Narayanan reference teaches in Fig. 1B an interconnect 135 that connects the cathode 103 with the anode 104. The Narayanan reference does not teach or suggest the limitation of a first reinforcing film that is in physical contact with and interposed between the electrolyte and the first end of the first electrically conductive gas diffusion layer of the first electrode, and the limitation that a second reinforcing film that is in physical contact with and interposed between the electrolyte and the second end of the second electrically conductive gas diffusion layer of the second electrode, where the second reinforcing film is separate from the second catalyst layer, as recited in amended claim 7.

The Badding Reference

The Badding reference is cited by the Examiner to show that a fill 203 is an electrically conductive rivet member. The Badding reference teaches that a fill 203 can be made of noble metal alloys. See paragraph 50. However, the Badding reference does not teach or suggest the limitation of a first reinforcing film that is in physical contact with and interposed between the electrolyte and the first end of the first electrically conductive gas diffusion layer of the first electrode, and the limitation that a second reinforcing film that is in physical contact with and interposed between the electrolyte and the second end of the second electrically conductive gas diffusion layer of the second electrode, where the second reinforcing film is separate from the second catalyst layer, as recited in amended claim 7.

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Accordingly, Applicants respectfully submit that the combination of the Maeda reference, the Kuroki reference, the Narayanan reference, and the Badding reference do not teach or suggest a first reinforcing film being in physical contact with and interposed between the electrolyte and the first end of the first electrically conductive gas diffusion layer of the first electrode, and a second reinforcing film being in physical contact with and interposed between the electrolyte and the second end of the second electrically conductive gas diffusion layer of the second electrode, where the second reinforcing film is separate from the second catalyst layer, as recited in amended claim 7. Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 7.

Applicants note that dependent claims 8-9 also recite patentable subject matter. As such, for this and the reasons set forth above, dependent claims 8-9 also define over the art of record. Applicants note that claim 14 has been canceled, hence the rejection is moot.

Claims 12-13

Claims 12 and 13 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Maeda reference in view of United States Patent No. 5,773,160 to Wilkinson et al. (hereafter "Wilkinson"). Applicants respectfully submit that the combination of the Maeda reference and the Wilkinson reference does not teach or suggest a coolant passage formed in a spacing between the casing and the plurality of fuel cells so that the coolant flows along a surface of the casing, as recited in amended claim 12.

The Maeda reference is silent regarding the limitation of a casing to house the fuel cells and a coolant passage. The Wilkinson reference teaches in Fig. 1 a casing that house a fuel cell stack. See Col. 10, lines 19-22. The Wilkinson reference teaches in Fig. 6B a coolant manifold opening 250 within plate 210. The coolant manifold opening 250 supplies coolant to multiple coolant fluid flow channels 262 that are formed on a surface of the plate 210. See Col. 11, lines 36-52. In contrast, amended claim 12 recites that a coolant passage formed in a spacing between the casing and the plurality of fuel cells so that the coolant flows along a surface of the casing.

Accordingly, Applicants respectfully submit that the combination of the Maeda reference and the Wilkinson reference does not teach or suggest a coolant passage formed in a spacing

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between the casing and the plurality of fuel cells so that the coolant flows along a surface of the casing, as recited in amended claim 12. Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 12.

Applicants note that dependent claim 13 also recites patentable subject matter. As such, for this and the reasons set forth above, Applicants respectfully submit that dependent claim 13 also defines over the art of record.

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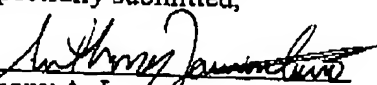
CONCLUSION

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Applicants submit herewith a Request for Continued Examination and a petition for one-month extension of time. Applicants believe no other fee is due with this statement. However, if an additional fee is due, please charge our Deposit Account No. 12-0080, under Order No. TOW-066RCE from which the undersigned is authorized to draw.

Dated: February 9, 2007

Respectfully submitted,

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